

United States Steel Corporation



November 9, 2010

For Settlement Purposes Only

1



U. S. Steel's Vision - Making Steel. World Competitive. Building Value. - is supported by a series of core values within the company. One of those core values is environmental stewardship. We recognize that the earth is a shared and finite resource that we all must safeguard for generations to come. It is our commitment to sustainability that drives our operations to adopt management systems and best practices that foster continuous improvement in our processes; preserving vital resources and ensuring the future of the industry.

We do this because U. S. Steel is more than a global leader in the steel industry; we are your friends, neighbors and community partners. We breathe the same air, drink the same water and share the same hopes and dreams for our families.

As a company, U. S. Steel articulates its core value of environmental stewardship through four basic principles which are the responsibility of all of our operations and our employees. They are:

Compliance with all environmental laws and regulations; Continuous improvement in environmental and resource management; Continued reduction of emissions; Community partnerships to protect and preserve natural resources.

Source: <http://www.uss.com/corp/environment/overview.asp>

For Settlement Purposes Only

2

Investigative Actions

- Gary Works, Great Lakes Works, Granite City Works
- Investigation 2006-2009
 - Inspections
 - U.S. EPA
 - IDEM, MDEQ, IEPA
 - U.S. EPA Contractor
- Information Requests

For Settlement Purposes Only

3



Gary Works

For Settlement Purposes Only

4

Gary Works

New Source Review

For Settlement Purposes Only

5

Regulatory Framework – New Source Review (NSR)

- A Project Triggers NSR if:
 - Major source
 - Make a modification
 - Physical change, or
 - Change in method of operation
 - Net emission increase is significant
 - 25 tpy PM; 15 tpy PM₁₀; 40 tpy SO₂
- Permit
 - BACT and modeling

For Settlement Purposes Only

6

Gary Works - NSR

- 1990 #4 Modifications
- 2005 #13/14 Reline

For Settlement Purposes Only

7

#4 Blast Furnace

- Improved bosh cooling by increasing water velocities
- Increase cooling plate density in the lower stack, adding cooling places in the stack region to increase heat removal
- New graphite cooled carbon hearth to provide better cooling
- Rebrick the bosh with SIC refractory

For Settlement Purposes Only

8

#4 Blast Furnace

- Changes to furnace would have reduced downtime, increasing production
- 17% increase in production after change
 - Obvious step increase
 - Little year to year variability before or after changes

#13/14 Blast Furnace

- Replacement of the furnace refractory lining with new and thinner refractory brick;
- Replacement of furnace shell;
- Removal and replacement of the top charging system with a new "bell-less" charging system;
- Placement of new copper staves in the mantle area of the furnace;
- Installation of new copper cooling places and a new bustle pipe;
- Repair of the checker work brick in the stoves and various structural, mechanical, and electrical repairs;
- Enlargement of the slag granulator addition of a stack;

#13/14 Blast Furnace

- Changes to furnace would have reduced downtime, increasing production
- Demand Exclusion must have some basis
 - Highest 3 months production, extrapolated to one year is 3,235,000 TPY, Actual production was 3,467,128.
- EPA realizes it has litigation risk, but this violation ties in with another, to be discussed later

Gary Works

Opacity

For Settlement Purposes Only

12

Gary Works Opacity

- 326 IAC 6.8-10-3, 326 IAC 5-1-2, NESHAP Subpart FFFFF – Fugitive Opacity
 - #8 Slag Pit (2)
 - Smoking Bottle Cars
 - Opacity exiting QBOP Shop
 - #4, 8 Blast Furnace loading enclosure (14)
 - #6, 8 & 14 Blast Furnace casthouse monitor opacity (9)
 - BOP Shop Roof Monitor (10)
 - BOP Shop North baghouse (1)
 - Blast Furnace Bell Leaks (1)
 - Blast Furnace Relief Valve Openings (3-2 self, 1 from readings)
 - Iron Beaching (1)
 - Coke Processing Equipment (7)
 - #2 Coke Battery Underfire Stack (3000+)
 - #5 Coke Battery Underfire Stack (5000+)
 - #7 Coke Battery Underfire Stack (5500+)

For Settlement Purposes Only

13

Gary Works Opacity (Cont.)

- 326 IAC 6.8-9-3, NESHAP Subpart CCCCC– Coke Ovens
 - #2, 5 & 7 Pushing (20)
 - #5 & 7 Door Leaks (10)
- 326 IAC 11-3-2 for Coke Ovens
 - #2 Offtakes (7)

Gary Works

Operations

For Settlement Purposes Only

15

Gary Works Operations

- Blast Furnace #14
 - removal of suction from one tap hole when opening another
- Blast Furnace Flares
 - Failure to have pilot flame present
- Blast Furnace bleeder openings
 - Failure to permit as emission source
- NESHAP Subpart FFFFF,
 - Failure to set damper positions in Operations and Maintenance Plans
- Leak Detection and Repair
 - Failure to make first attempt at repair within 5 days. (6)



Granite City, IL

For Settlement Purposes Only

17

Granite City - New Source Review

■ 1994 Blast Furnace B

- In U.S. Steel's response to an EPA Information Request, U.S. Steel supplied documents GCS-1941 Benefit Statement, and GCS-1941 B Blast Furnace Scope of Work.
- Prior to 1994, the furnace was designed for a hot blast of 1800 F and used a volume of cooling water that resulted in relatively high refractory temperatures. These refractory temperatures required a systematic maintenance to repair leaks and tuyere failures, which inherently limited the furnace's operating time.
- In 1994, U.S. Steel changed the design of B Furnace by increasing the hot blast to 2000 F and redesigning the cooling system. Specifically, U.S. Steel tripled the cooling water flow and increased the number of cooling water plates.
- These design changes reduced the need to suspend operation, thereby increased the period of operation and increasing production and emissions.

Granite City Works

Opacity

For Settlement Purposes Only

19

Granite City - Opacity

- NESHAP Subpart FFFFF
 - B2 Blast Furnace Casthouse monitor (7)
 - BOP Shop Roof monitor exceedances (56)
- Title V, 5:5.2.2.b, 212.123 (60%, 8 min)
 - Iron Beaching (1)

Granite City Works

Operations

For Settlement Purposes Only

21

Granite City Works Operations

- NESHAP Subpart FFFFF and Title V
 - Operational violations
 - Failing to meet fan amp limits, damper positions
 - Failed inspection, monitoring and recordkeeping
 - Blast Furnace B Bleeder Openings
 - Much higher than company average
 - O&M Plan failed to meet minimum requirements
- Section 114 CAA
 - Failure to monitor beaching activity according to request (3)



Great Lakes Works

For Settlement Purposes Only

23

Great Lakes - Opacity

- R 336.1358 and R336.1201(3), 40 C.F.R Part 63, Subpart FFFFF
 - B2 Blast Furnace Casthouse monitor (1, with 4 claimed recording error)
 - BOF Shop roof monitor due to slag skimming (1)
 - BOP Shop Roof monitor exceedances (73)
- R 324.5 524(2)
 - B2 & D4 Blast Furnace Slag Pits (143)
- R324.5524(2)
 - Iron Beaching (19)
 - B2 & D4 Blast Furnace Relief Valves (27)

Great Lakes Works

Operations and Records

For Settlement Purposes Only

25

Great Lakes Works Operations

- NESHAP Subpart FFFFF and Title V
 - Over 200 operational violations
 - Opacity exceedances
 - Failing to implement required control
 - Failed inspection, monitoring and recordkeeping
 - Blast Furnace Bells - Continuing operation during period of malfunction
 - Blast Furnace D4 Bleeder Openings
 - Much higher than B2 and company average
 - O&M Plans failed to meet minimum requirements
- Title V
 - Operating during inspection without runner covers

End of Violations

For Settlement Purposes Only

27

Region-Wide Concerns

- Blast Furnace Relief Valve Openings
 - Hundreds per year
- Casthouse SO₂ Emissions
 - Thousands of tons, but not controlled
- Slag Pits
 - Opacity from dressing
 - Opacity from first tap into new row
 - SO₂ emissions significant but not accounted for
- Iron Beaching

For Settlement Purposes Only

28

REMEDY

For Settlement Purposes Only

29

Region-Wide Remedy

- Control Slag Emissions
 - Slag granulator, or
 - Enclosure over slag pit which is ducted to control
- Control SO₂ at Casthouses Where a Baghouse Exists
 - Dry venturi scrubber
- Install Semi-Clean Blast Furnace Relief Valves
 - After dust catcher or scrubber
 - For all furnaces where unplanned relief openings exceed 4 per month

For Settlement Purposes Only

30

Gary Works Remedy – New Equipment

- #4 Blast Furnace Casthouse Active Controls
 - Hoods at trough, dam, Fe spout, flow to a baghouse
 - Remedy for PSD and SIP violations
 - Investigate technical and economic feasibility of dry SO₂ scrubber on existing fume capture system
- #14 Blast Furnace Fan Upgrade
 - Larger airflow capacity to retain capture at two holes
 - Remedy for PSD and SIP violations
 - Investigate technical and economic feasibility of dry SO₂ scrubber on existing fume capture system
- Install partial cover over #8 slag pit, near slag spout, direct vapors to a wet scrubber
- Build enclosure with control device for iron beaching
- No new equipment at coke ovens due to assumed replacement

For Settlement Purposes Only

31

Gary Works Remedy – Work Practices

- SOP for Bell Leaks – Repairs to commence within 48 hours once any single opacity reading exceeds 10%
- Identify operational and equipment improvements at the BOP shop to reduce roof monitor emissions
- Identify operational and equipment improvements at the coke oven quench towers
- Identify ways and write SOP designed to limit slips from blast furnace #4 and #8. Accept a limit on # of slips as a permit condition.
- Place Kaewool covers over Bottle car openings

Gary Works Remedy – Work Practices (cont.)

- Identify ways to improve QBOP slag skimming dust capture, and close openings in QBOP shop so opacity exits the shop at the roof monitor
- Install cameras to capture emissions from #6 and #8 Blast Furnace roof monitors
- Identify operational and equipment improvements to limit all blast furnace relief valve open time

Granite City Remedy – New Equipment

- B Blast Furnace casthouse upgrade
 - Capture particulate from entire length of trough and from dam. Extend trough hood over dam, or install new hood over dam
- Build enclosure with control device for iron beaching

Granite City Remedy – Work Practices

- SOP for Bell Leaks – Repairs to commence within 48 hours once any single opacity reading exceeds 10%
- Increase Method 9 VE readings at the BOP shop to confirm adequacy of existing controls.
- Identify ways and write SOP designed to limit slips from blast furnaces. Accept a limit on # of slips as a permit condition.
- Identify operational and equipment improvements to limit all blast furnace relief valve open time

Granite City Remedy – Work Practices (cont.)

- Identify operational and equipment improvements to eliminate opacity from planned blast furnace relief valve openings, as seen at Gary Works
- SOP for Casthouse Maintenance – define “active work” and limit length of time before and after work that covers can be off

Great Lakes Remedy – New Equipment

- Install partial cover over B2 slag pit, near slag spout, direct vapors to a wet scrubber
- Build an enclosure with a control device for iron beaching

Great Lakes Remedy – Work Practices

- SOP for Bell Leaks – Repairs to commence within 48 hours once any single opacity reading exceeds 10%
- Increase Method 9 VE readings at the BOP shop to confirm adequacy of new controls.
- Identify ways and write SOP designed to limit slips from blast furnaces. Accept a limit on # of slips as a permit condition.
- Identify operational and equipment improvements to limit all blast furnace relief valve open time

Great Lakes Remedy – Work Practices (cont.)

- Identify operational and equipment improvements to eliminate opacity from planned blast furnace relief valve openings, as seen at Gary Works
- SOP for Casthouse Maintenance – define “active work” and limit length of time before and after work that covers can be off

Proposed Resolution Process

For Settlement Purposes Only

40

Settlement Approach

- Multi-facility Settlement
- Expedited Negotiations
- Settlement Document

For Settlement Purposes Only

41

Benefits of This Type of Settlement Process

- Significant Environmental Benefits
- Flexibility
- Resource Savings
- Mitigated Penalties
- Releases for Past Federal and State Air Liability
- Level Playing Field

For Settlement Purposes Only

42

Settlement Document

- Emissions Reductions
- Permitting
- Federal and State Releases
- Reporting Requirements
- Penalties

For Settlement Purposes Only

43

Next Steps

- 14 days to decide if US Steel wants to take part in this settlement process
- Expedited time frame to agree on and draft a settlement

For Settlement Purposes Only

44



For Settlement Purposes Only